SERVICE MANUAL ST140/ST140L

marantz®

model ST140/ST140L

Stereophonic Tuner

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

ORDERING PARTS:
Parts can be ordered either by mail or by telex. In both cases, MARANTZ part number has to be specified. If you order by mail, fulfil MARANTZ order forms.

MARANTZ S.A.
EUROPEAN PARTS DEPARTMENT
2, Avenue Léopold III
B-7120 PERONNES-lez-BINCHE
BELGIUM
TWX: 57589 SEPLT B

The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING:
Parts may be ordered from the following addresses:

EUROPE

MARANTZ S.A.
European Parts Department
2, Avenue Léopold III
B-7120 Péronnes-lez-Binche
Belgium
Telex: 57589

MARANTZ DENMARK
Bregnerødvej 132b
3460 Birkerød
Denmark
Telex: 39137

MARANTZ BELGIUM
45 Rue Auguste Van Zande
1080 Brussels
Belgium

MARANTZ NEDERLAND B.V.
Wagenmackersweg 3
3449 H.V. Woerden
Netherlands

MARANTZ S.A.
326 Avenue Louise Bte 32
1050 Bruxelles
Belgium
Telex: 26602

MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

MARANTZ SVENSKA A.B.
Svartviksvägen 56
Träneberg Bromma
Sweden
Telex: 13449

MARANTZ ITALIANA S.p.A.
Via Monte Napoleone, 10
20121 Milano
Italia

MARANTZ GERMANY G.M.B.H.
Max-Planckstrasse 22
6072 Dreieich 1
Germany
Telex: 4185316

MARANTZ AUDIO U.K. LTD.
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

MARANTZ AUSTRIA Ge.M.B.H.
25 Franz Lisztgasse
2380 Perchtoldsdorf
Austria
Telex: 113583

AUSTRALIA

MARANTZ AUSTRALIA PTY., LTD.
19 Chard Road
Brookvale, NSW 2100
Australia
Telex: 24121

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

marantz®

MODEL ST140/ST140L STEREOPHONIC TUNER

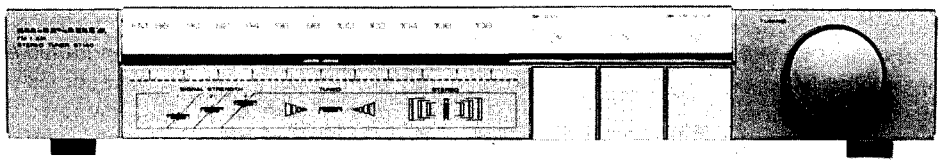


TABLE OF CONTENTS

SECTION PAGE

INTRODUCTION 1

1. P.W. BOARDS 1
2. TEST EQUIPMENT REQUIRED FOR SERVICING 1
3. TUNER ALIGNMENT PROCEDURES 2
4. ALIGNMENT POINTS 4
5. BLOCK DIAGRAM 5
6. SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS 6
   - 6.1 Tuner Assembly (P100) Schematic Diagram and Component Locations 6
   - 6.2 Band Indicator Assembly (PX00) Schematic Diagram and Component Locations 6
   - 6.3 Terminal Assembly (PW00) Schematic Diagram and Component Locations 8
   - 6.4 Dial Pointer Assembly (PZ00) Schematic Diagram and Component Locations 9
   - 6.5 Signal Strength Assembly (PY00) Schematic Diagram and Component Locations 9
7. EXPLODED VIEW AND PARTS LIST 10
8. ELECTRICAL PARTS LIST 12
9. TECHNICAL SPECIFICATIONS 15
10. SCHEMATIC DIAGRAM 16

INTRODUCTION

This service manual was prepared for use by Authorized Warranty Staions and contains service information for the Marantz Model ST140/ST140L Stereophonic Tuner.

Servicing information and voltage data included in this manual are intended for use by knowledgeable and experienced personnel only. All instructions should be read carefully. No attempt should be made to proceed without a good understanding of circuitry operation.

The parts list furnishes complete ordering information. Most replacement parts should be ordered from the Marantz Company. However, a simple description is included for parts which can be obtained locally.

1. P.W. BOARDS

As can be seen from the circuit diagram the chassis of Model ST140/ST140L consists of the following units. Each unit mounted on a printed circuit board is described within the square enclosed by a bold dotted line on the circuit diagram.

1. **Tuner . . . . . mounted on P.W. Board P100**
2. **Terminal . . . . . mounted on P.W. Board PW00**
3. **Band Indicator . . . . . mounted on P.W. Board PX00**
4. **Signal Strength . . . . . mounted on P.W. Board PY00**
5. **Dial Pointer . . . . . mounted on P.W. Board PZ00**

2. TEST EQUIPMENT REQUIRED FOR SERVICING

Item	Use
AM Signal Generator	Signal source for AM alignment
Test Loop	Use with AM signal generator
FM Signal Generator	Signal source for FM alignment
MPX Signal Generator	Stereo separation alignment and trouble shooting
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
AC VTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO alignment
Frequency Counter	MPX oscillator adjustment (VCO)
Circuit Tester	Trouble shooting
DC VTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to tuner
Line Voltmeter	Monitors potential of primary power to tuner
Variable Autotransformer (0 ~ 140V AC, 10A)	Adjusts level of primary power to tuner

3. TUNER ALIGNMENT PROCEDURES

A dummy resistor of 47 kohms must be connected across the tuner output terminals before alignment.

3.1 FM Alignment Procedures (Band switch in the "FM" position)

FM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust
1	RF generator to FM antenna terminals through matching network (300 ohms, balanced) (Maintain RF level below limit.)	87.4 MHz	VTVM to L or R channel output (JW02)	87.4 MHz with tuning gang closed.	L104 for maximum output.
2		108.2 MHz		108.2 MHz with tuning gnag open.	C114 for maximum output.
3		90 MHz		90 MHz	L101, L102 for maximum output.
4		106 MHz		106 MHz	ANT. RF. TRIM. CAP. for maximum output.
5	Repeat steps 1 to 4.				
6	Check overall response curve and repeat above steps as necessary to obtain maximum sensitivity.				
7	No connection.	No signal.	Center Meter between J201-J202		L201 Primary core center tuning meter pointer indicates its center.
8	RF generator 1 mV output to FM antenna terminals through matching network. (300 ohms, balanced)	98 MHz	Distortion meter to output. (JW02)	98 MHz	L201 Secondary core for minimum distortion.

Multiplex Alignment Procedures (Band switch in the "FM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust
1	RF generator to FM antenna terminals through matching network (300 ohms, balanced), with 1 mV FM stereo signal modulation level DIN 40 kHz +8% pilot IHF 67.5 kMz +9% pilot.	No Modulation.	Frequency counter to J310.	98 MHz	R318 so that Frequency counter may precisely read 19 kHz.
2		Stereo left (1,000 Hz)	VTVM to right channel output. (JW02-R)		R315 for same separation in both channels.
3		Stereo right (1,000 Hz	VTVM to left channel output. (JW02-L)		
4	Repeat steps 2 and 3.				

3.2 AM Alignment Procedures

MW IF Alignment (Selector switch in the "MW" position)

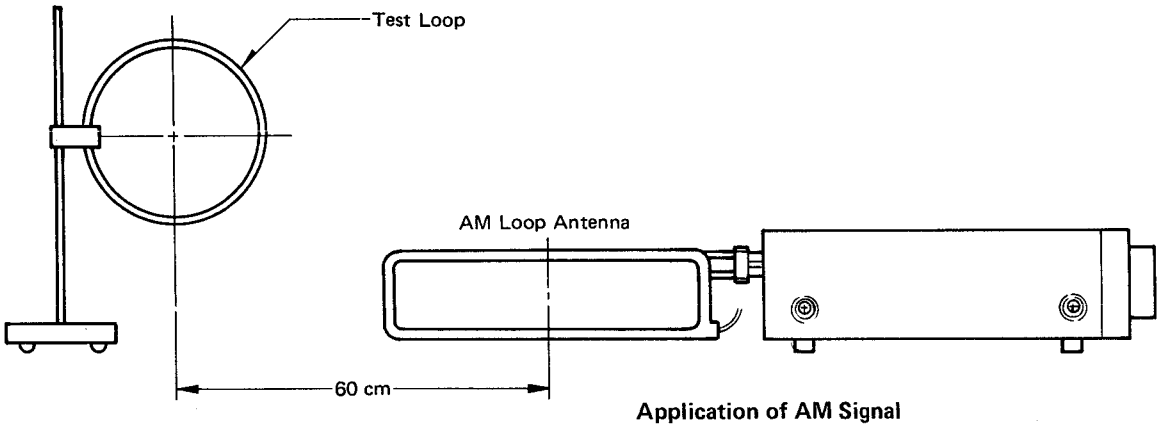
Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust
1	Sweep generator to AM Antenna Terminal	450 kHz marker.	Oscilloscope to RA10.	Quiet point on band.	LA05 and LA06 for maximum and symmetric response.

MW RF Alignment (Selector switch in the "MW" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust
1	Apply the signal to the AM loop antenna from the RF generator using the test loop.	525 kHz	VTVM to L or R channel output. (JW02)	525 kHz with tuning gang closed.	LA03 for maximum output.
2		1,630 kHz		1,630 kHz with tuning gang open.	OSC. TRIM. CAP. for maximum output.
3		600 kHz		600 kHz	LA01 for maximum output.
4		1,400 kHz		1,400 kHz	ANT. TRIM. CAP. for maximum output.
5	Repeat steps 1 to 4 as necessary to obtain maximum sensitivity.				

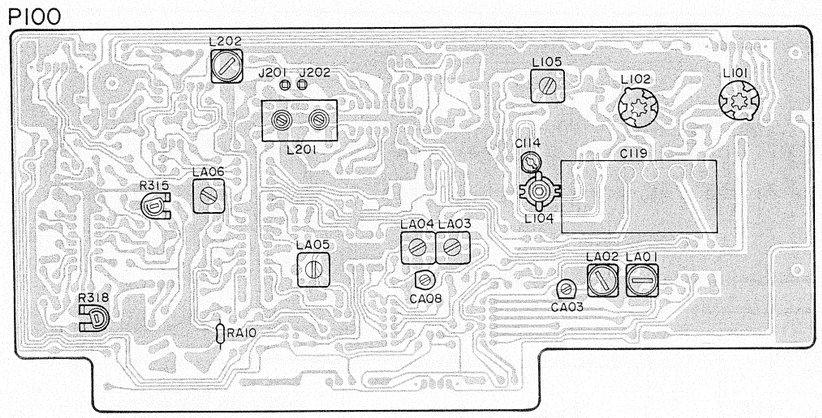
LW RF Alignment (Selector switch in the "LW" position) (ST140L ONLY)

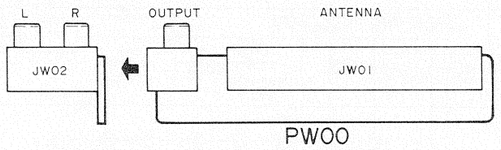
Step	Signal Source Connection	Signal Frequency	Indicator Connection	Set Dial Pointer to:	Adjust
1	Apply the signal to the AM loop antenna from the RF generator using the test loop.	145 kHz	VTVM to L or R channel output. (JW02)	145 kHz with tuning gang closed.	LA04 for maximum output.
2		290 kHz		290 kHz with tuning gang open.	CA08 for maximum output.
3		170 kHz		170 kHz	LA02 for maximum output.
4		270 kHz		270 kHz	CA03 for maximum output.
5	Repeat steps 1 to 4 as necessary to obtain maximum sensitivity.				



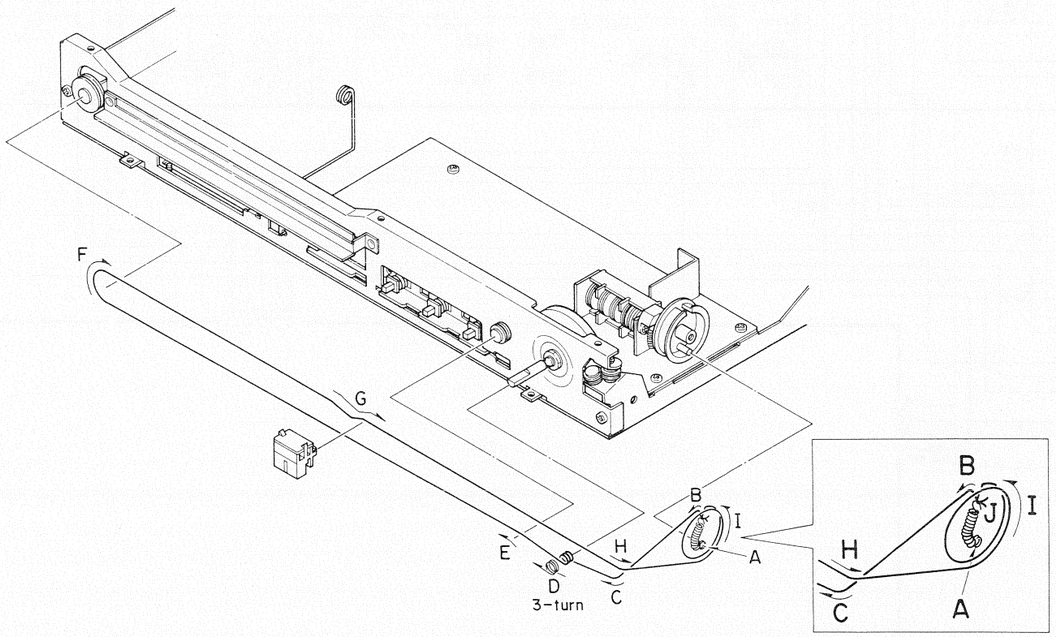
Application of AM Signal

4. ALIGNMENT POINTS

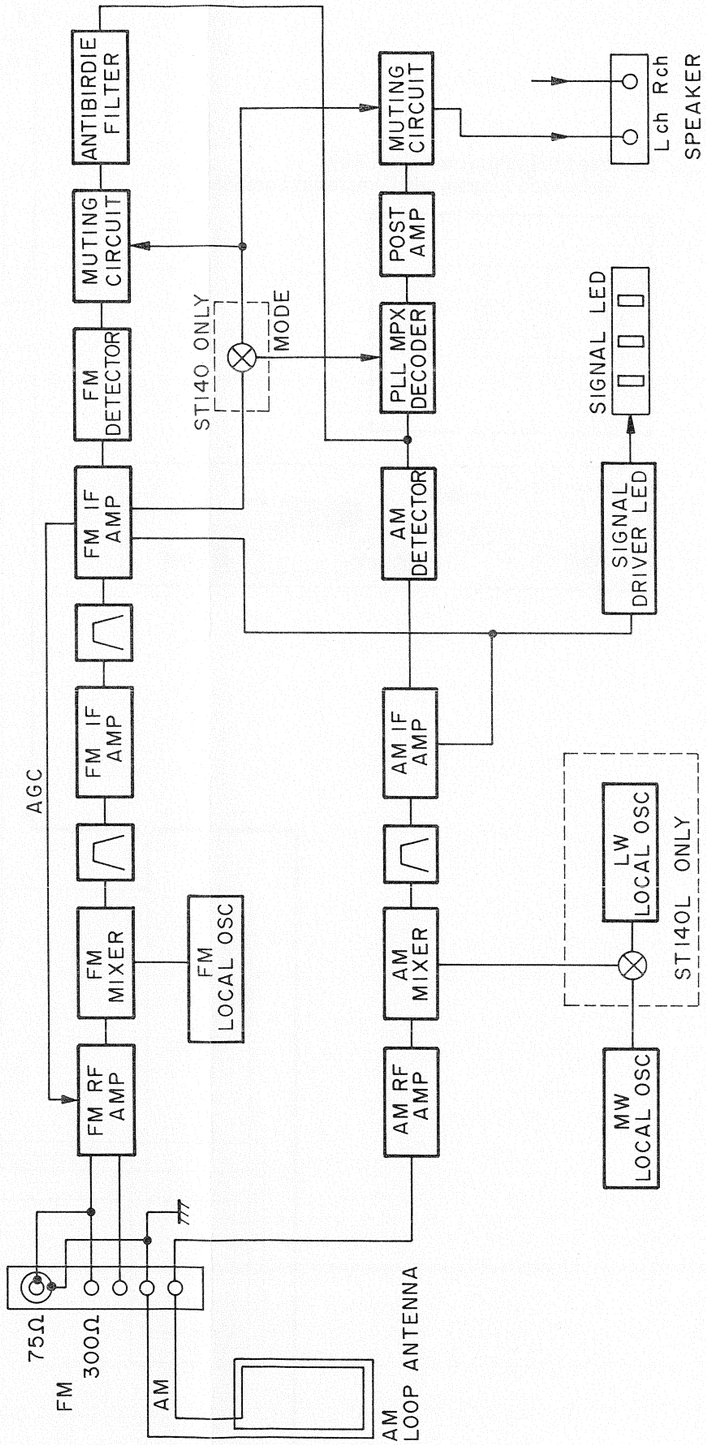




DIAL STRINGING

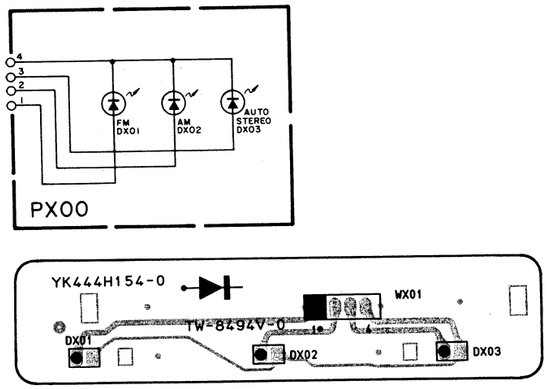


5. BLOCK DIAGRAM

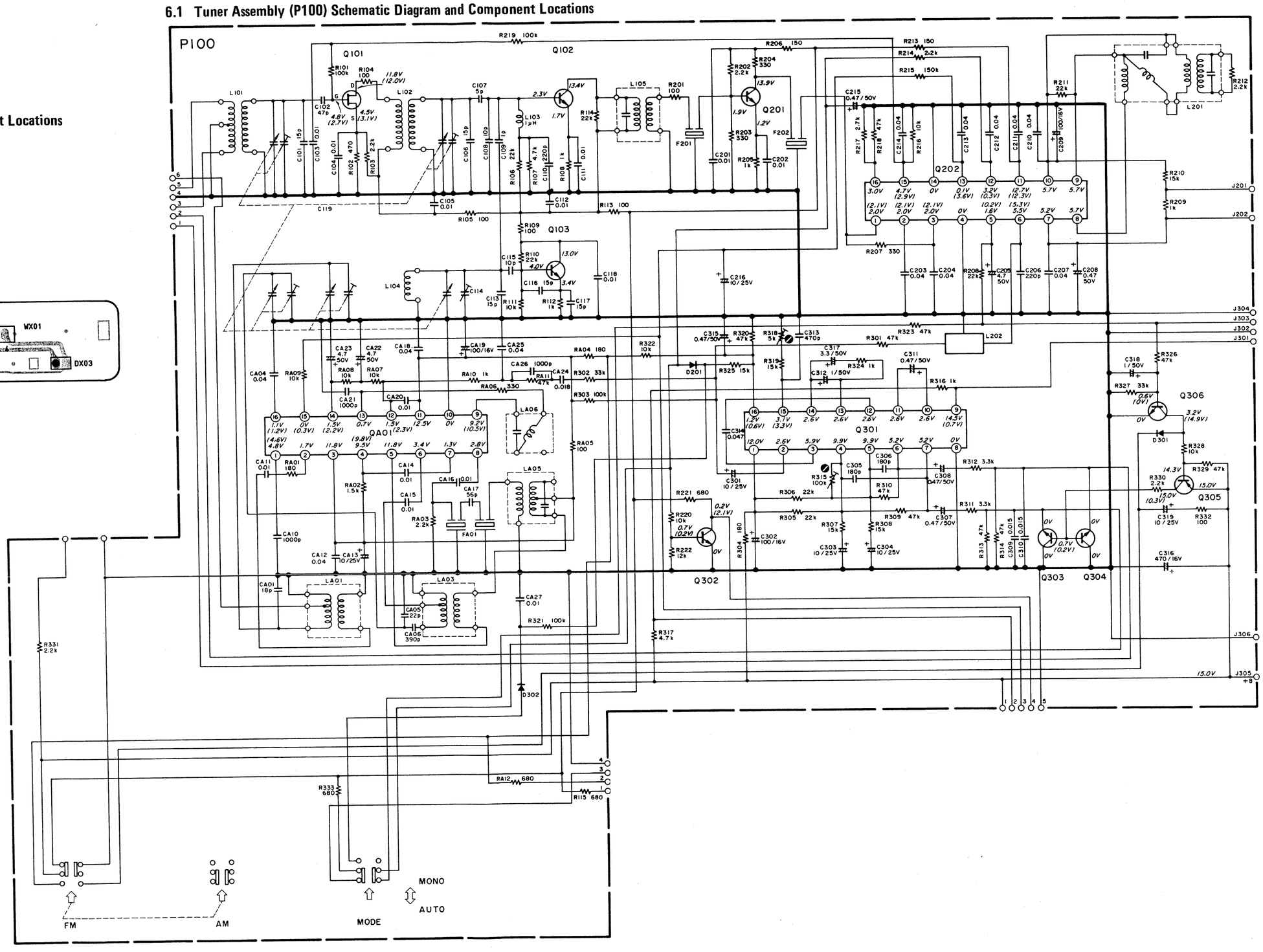


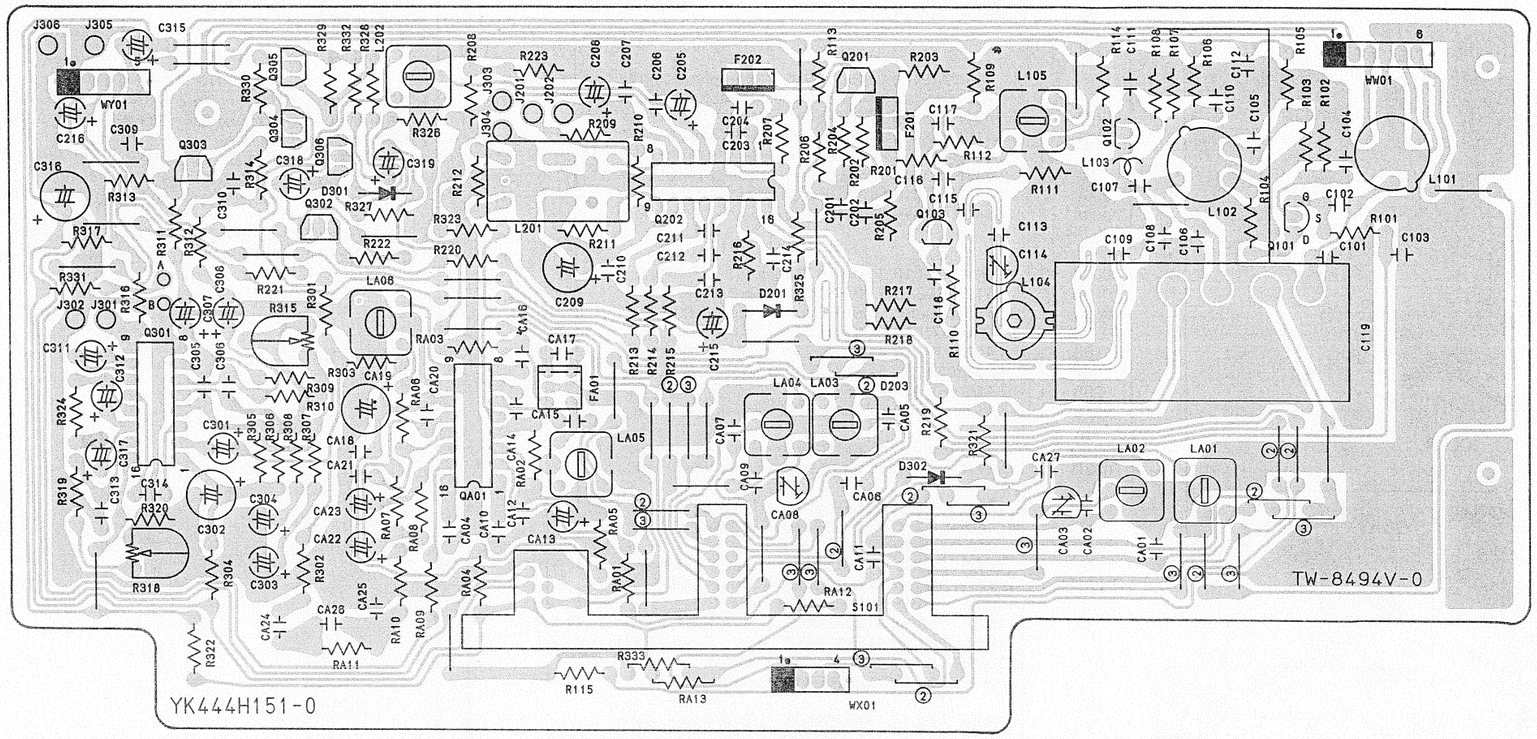
6. SCHEMATIC DIAGRAM AND COMPONENT LOCATIONS

6.2 Band Indicator Assembly (PX00) Schematic Diagram and Component Locations

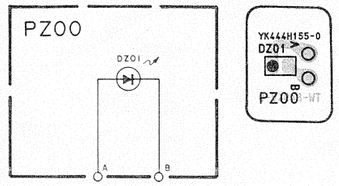


6.1 Tuner Assembly (P100) Schematic Diagram and Component Locations

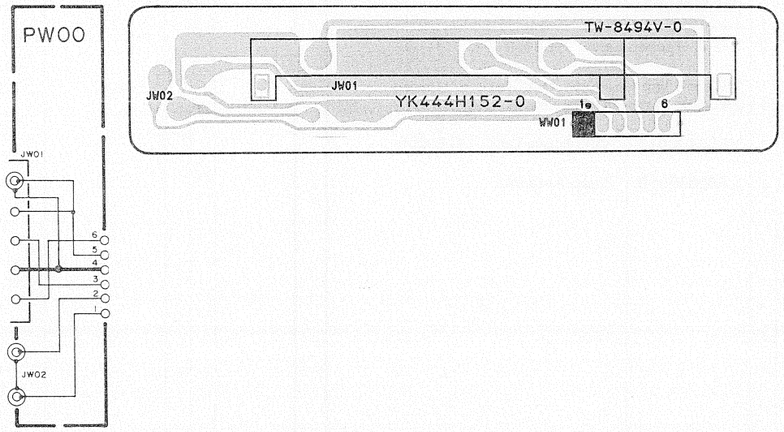




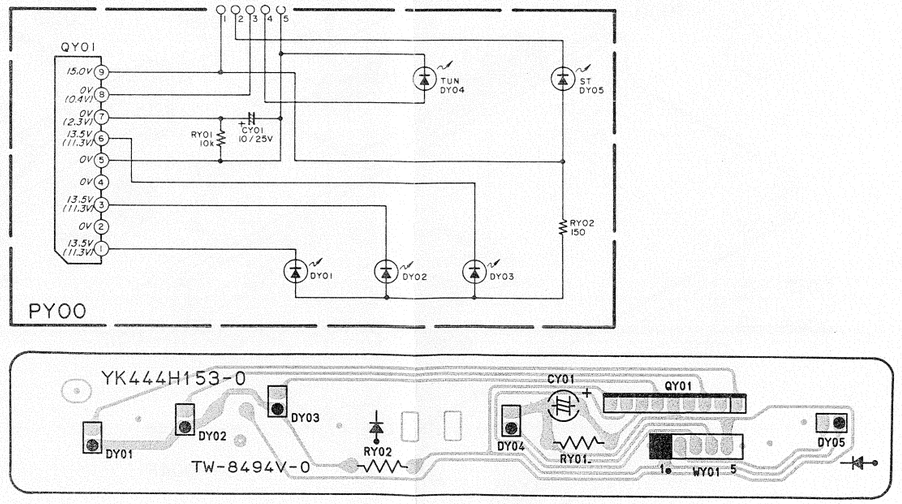
6.4 Dial Pointer Assembly (PZ00) Schematic Diagram and Component Locations



6.3 Terminal Assembly (PW00) Schematic Diagram and Component Locations



6.5 Signal Strength Assembly (PY00) Schematic Diagram and Component Locations



8. ELECTRICAL PARTS LIST

●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION		
				P100-TUNER CIRCUIT BOARD		
P100	1	1	YK444H1510	P.W. Board, Tuner		
	1	1	ZZ444H8510	P.W. Board Assembly (ST140)		
	1		ZZ445H8510	P.W. Board Assembly (ST140L)		
				P100-CAPACITORS		
CA01	1	1	DD15120370	Ceramic	12pF	±5%
CA02	1		DD15820370	Ceramic	82pF	±5%(ST140L)
CA03	1		CT12000090	Trimming	20pF	(ST140L)
CA04	1	1	DK18403320	Ceramic	0.04μF	
CA05	1	1	DD15220370	Ceramic	22pF	±5%
CA06	1	1	DD15391550	Ceramic	390pF	±5%
CA07	1		DD15101370	Ceramic	100pF	±5%(ST140L)
CA08	1		CT12000090	Trimming	20pF	(ST140L)
CA09	1		DF15151550	Film	150pF	±5%(ST140L)
CA10	1	1	DK18102300	Ceramic	1000pF	
CA11	1	1	DK18103310	Ceramic	0.01μF	
CA12	1	1	DK18403320	Ceramic	0.04μF	
CA13	1	1	EA10602530	Elect	10μF	25V
CA14	1	1	DK18103310	Ceramic	0.01μF	
CA15	1	1	DK18103310	Ceramic	0.01μF	
CA16	1	1	DK18103310	Ceramic	0.01μF	
CA17	1	1	DD15560370	Ceramic	56pF	±5%
CA18	1	1	DK18403320	Ceramic	0.04μF	
CA19	1	1	EA10701630	Elect	100μF	16V
CA20	1	1	DK18103310	Ceramic	0.01μF	
CA21	1	1	DK18102300	Ceramic	1000pF	
CA22	1	1	EA47505030	Elect	4.7μF	50V
CA23	1	1	EA47505030	Elect	4.7μF	50V
CA24	1	1	DF15183310	Film	0.018μF	±5%
CA25	1	1	DK18403320	Ceramic	0.04μF	
CA26	1	1	DF15102310	Film	1000pF	±5%
CA27	1	1	DK18103310	Ceramic	0.01μF	(ST140)
C101	1	1	DD15150370	Ceramic	15pF	±5%
C102	1	1	DD15470370	Ceramic	47pF	±5%
C103	1	1	DK18103310	Ceramic	0.01μF	
C104	1	1	DK18103310	Ceramic	0.01μF	
C105	1	1	DK18103310	Ceramic	0.01μF	
C106	1	1	DD15150370	Ceramic	15pF	±5%
C107	1	1	DD10050370	Ceramic	5pF	±0.25pF
C108	1	1	DD11100370	Ceramic	10pF	±0.5pF
C109	1	1	DD10010300	Ceramic	1pF	±0.25pF
C110	1	1	DD15221370	Ceramic	220pF	±5%
C111	1	1	DK18103310	Ceramic	0.01μF	
C112	1	1	DK18103310	Ceramic	0.01μF	
C113	1	1	DD15150340	Ceramic	15pF	±5%
C114	1	1	CT11000150	Trimming	10pF	
C115	1	1	DD11100300	Ceramic	10pF	±0.5pF
C116	1	1	DD15150300	Ceramic	15pF	±5%
C117	1	1	DD15150300	Ceramic	15pF	±5%
C118	1	1	DK18103310	Ceramic	0.01μF	
C119	1	1	CA32400130	Variable, CR52J517		
C201	1	1	DK18103310	Ceramic	0.01μF	
C202	1	1	DK18103310	Ceramic	0.01μF	
C203	1	1	DK18403320	Ceramic	0.04μF	
C204	1	1	DK18403320	Ceramic	0.04μF	
C205	1	1	EA47505030	Elect	4.7μF	50V
C206	1	1	DD15221370	Ceramic	220pF	±5%
C207	1	1	DK18403320	Ceramic	0.04μF	
C208	1	1	EA47405030	Elect	0.47μF	50V
C209	1	1	EA10701630	Elect	100μF	16V
C210	1	1	DK18403320	Ceramic	0.04μF	
C211	1	1	DK18403320	Ceramic	0.04μF	
C212	1	1	DK18403320	Ceramic	0.04μF	
C213	1	1	DK18403320	Ceramic	0.04μF	
C214	1	1	DK18403320	Ceramic	0.04μF	
C215	1	1	EA47405030	Elect	0.47μF	50V
C216	1	1	EA10602530	Elect	10μF	25V
C301	1	1	EA10602530	Elect	10μF	25V
C302	1	1	EA10701630	Elect	100μF	16V
C303	1	1	EA10602530	Elect	10μF	25V
C304	1	1	EA10602530	Elect	10μF	25V
C305	1	1	DD15181370	Ceramic	180pF	±5%
C306	1	1	DD15181370	Ceramic	180pF	±5%
C307	1	1	EA47405030	Elect	0.47μF	50V
C308	1	1	EA47405030	Elect	0.47μF	50V
C309	1	1	DF15153310	Film	0.015μF	±5%
C310	1	1	DF15153310	Film	0.015μF	±5%
C311	1	1	EA47405030	Elect	0.47μF	50V
C312	1	1	EA10505030	Elect	1μF	50V
C313	1	1	DF15471550	Film	470pF	±5%
C314	1	1	DF15473310	Film	0.047μF	±5%
C315	1	1	EA47405030	Elect	0.47μF	50V
C316	1	1	EA47701630	Elect	470μF	16V
C317	1	1	EA33505030	Elect	3.3μF	50V
C318	1	1	EA10505030	Elect	1μF	50V
C319	1	1	EA10602530	Elect	10μF	25V
				P100-RESISTORS (All Resistors are ±5% and ¼W)		
RA01	1	1	GD05181140	180Ω		
RA02	1	1	GD05152140	1.5KΩ		
RA03	1	1	GD05222140	2.2KΩ		
RA04	1	1	GD05181140	180Ω		
RA05	1	1	GD05101140	100Ω		
RA06	1	1	GD05331140	330Ω		
RA07	1	1	GD05103140	10KΩ		
RA08	1	1	GD05103140	10KΩ		
RA09	1	1	GD05103140	10KΩ		
RA10	1	1	GD05102140	1KΩ		
RA11	1	1	GD05473140	47KΩ		
RA13	1	1	GD05681140	680Ω		

●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
R101	1	1	GD05104140	100KΩ
R102	1	1	GD05471140	470Ω
R103	1	1	GD05222140	2.2KΩ
R104	1	1	GD05101140	100Ω
R105	1	1	GD05101140	100Ω
R106	1	1	GD05223140	22KΩ
R107	1	1	GD05472140	4.7KΩ
R108	1	1	GD05102140	1KΩ
R109	1	1	GD05101140	100Ω
R110	1	1	GD05223140	22KΩ
R111	1	1	GD05103140	10KΩ
R112	1	1	GD05102140	1KΩ
R113	1	1	GD05101140	100Ω
R114	1	1	GD05223140	22KΩ
R115	1	1	GD05681140	680Ω
R201	1	1	GD05101140	100Ω
R202	1	1	GD05222140	2.2KΩ
R203	1	1	GD05331140	330Ω
R204	1	1	GD05331140	330Ω
R205	1	1	GD05102140	1KΩ
R206	1	1	GD05101140	100Ω
R207	1	1	GD05331140	330Ω
R208	1	1	GD05223140	22KΩ
R209	1	1	GD05102140	1KΩ
R210	1	1	GD05153140	15KΩ
R211	1	1	GD05223140	22KΩ
R212	1	1	GD05222140	2.2KΩ
R213	1	1	GD05101140	100Ω
R214	1	1	GD05222140	2.2KΩ
R215	1	1	GD05154140	150KΩ
R216	1	1	GD05103140	10KΩ
R217	1	1	GD05272140	2.7KΩ
R218	1	1	GD05473140	47KΩ
R219	1	1	GD05104140	100KΩ
R220	1	1	GD05103140	10KΩ
R221	1	1	GD05681140	680Ω
R222	1	1	GD05822140	8.2KΩ
R301	1	1	GD05473140	47KΩ
R302	1	1	GD05333140	33KΩ
R303	1	1	GD05104140	100KΩ
R304	1	1	GD05181140	180Ω
R305	1	1	GD05223140	22KΩ
R306	1	1	GD05223140	22KΩ
R307	1	1	GD05153140	15KΩ
R308	1	1	GD05153140	15KΩ
R309	1	1	GD05473140	47KΩ
R310	1	1	GD05473140	47KΩ
R311	1	1	GD05332140	3.3KΩ
R312	1	1	GD05332140	3.3KΩ
R313	1	1	GD05473140	47KΩ

●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION	
R314	1	1	GD05473140	47KΩ	
R315	1	1	RA02040800	200KΩ, Trimming	
R316	1	1	GD05102140	1KΩ	
R317	1	1	GD05472140	4.7KΩ	
R318	1	1	RA05020800	5KΩ, Trimming	
R319	1	1	GD05153140	15KΩ	
R320	1	1	GD05473140	47KΩ	
R321	1	1	GD05104140	100KΩ	(ST140)
R322	1	1	GD05103140	10KΩ	
R323	1	1	GD05473140	47KΩ	
R324	1	1	GD05102140	1KΩ	
R325	1	1	GD05153140	15KΩ	
R326	1	1	GD05473140	47KΩ	
R327	1	1	GD05333140	33KΩ	
R328	1	1	GD05103140	10KΩ	
R329	1	1	GD05473140	47KΩ	
R330	1	1	GD05222140	2.2KΩ	
R331	1	1	GD05222140	2.2KΩ	
R332	1	1	GD05101140	100Ω	
R333	1	1	GD05681140	680Ω	(ST140)
				P100-SEMICONDUCTORS	
QA01	1	1	HC10041030	IC	LA1240
Q101	1	1	HF200551D0	F.E.T.	2SK55(D)
Q102	1	1	HT308291C0	Transistor	2SC829(C)
Q103	1	1	HT308291C0	Transistor	2SC829(C)
Q201	1	1	HT327852D0	Transistor	2SC2785(EF, FF)
Q202	1	1	HC10033010	IC	HA11225
Q301	1	1	HC10046020	IC	AN7470
Q302	1	1	HT327852D0	Transistor	2SC2785(EF, FF)
Q303	1	1	HT327852D0	Transistor	2SC2785(EF, FF)
Q304	1	1	HT327852D0	Transistor	2SC2785(EF, FF)
Q305	1	1	HT111752D0	Transistor	2SA1175(EF, FF)
Q306	1	1	HT327852D0	Transistor	2SC2785(EF, FF)
D201	1	1	HD20001000	Diode	1S1555
D301	1	1	HD20001000	Diode	1S1555
D302	1	1	HD20001000	Diode	1S1555 (ST140)
				P100-MISCELLANEOUS	
FA01	1	1	FF10045200	Ceramic Filter, SFZ450B	
F201	1	1	FF11070130	Ceramic Filter, SFE10.7MS3G	
F202	1	1	FF11070130	Ceramic Filter, SFE10.7MS3G	
LA01	1	1	LA10295130	Ant. Coil, MW	
LA02	1		LA10295120	Ant. Coil, LW (ST140L)	
LA03	1	1	LO10013370	OSC Coil, MW	
LA04	1		LO10013380	OSC Coil, LW (ST140L)	
LA05	1	1	LI10013230	I.F.T. Coil, AM	
LA06	1	1	LI10013280	I.F.T. Coil, AM	

●(N):for Europe
●(A):for Australia

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
L101	1	1	LA12026170	Ant. Coil, FM
L102	1	1	LA12026180	Ant. Coil, FM
L103	1	1	LC11020120	Choke Coil, 1μH
L104	1	1	LO12036010	OSC Coil, FM
L105	1	1	LI10016010	I.F.T. Coil, FM
L201	1	1	LI20029030	I.F.T. Coil, FM
L202	1	1	LS10295020	M.P.X. Coil
S101	1	1	SP02030340	Push Switch, Band (ST140)
S101	1		SP04030330	Push Switch, Band (ST140L)
				PW00-TERMINAL CIRCUIT BOARD
PW00	1	1	YK444H1520	P.W. Board, Terminal
	1	1	ZZ444H8520	P.W. Board, Assembly
JW01	1	1	YT01050040	Terminal, Antenna (5P)
JW02	1	1	YT02020280	Terminal, Output (2P)
WW01	1	1	YU06080260	Jumper Lead (6P)
				PX00-BAND INDICATOR CIRCUIT BOARD
PX00	1	1	YK444H1540	P.W. Board, Band Indicator
	1	1	ZZ444H8540	P.W. Board Assembly
DX01	1	1	HI10044020	L.E.D. LN310GP, FM
DX02	1	1	HI10044020	L.E.D. LN310GP, MW
DX03	1	1	HI10044020	L.E.D. LN310GP, LW
WX01	1	1	YU04160260	Jumper Lead (4P)
				PY00-SIGNAL STRENGTH CIRCUIT BOARD
PY00	1	1	YK444H1530	P.W. Board, Signal Strength
	1	1	ZZ444H8530	P.W. Board Assembly
CY01	1	1	EA10602530	Elect Cap. 10μF 25V
RY01	1	1	GD05103140	Resistor 10KΩ ±5% ¼W
RY02	1	1	GD05101140	Resistor 100Ω ±5% ¼W
QY01	1	1	HC10146030	IC LB1423
DY01	1	1	HI10007320	L.E.D. GL-9PR9, Signal 1
DY02	1	1	HI10007320	L.E.D. GL-9PR9, Signal 2
DY03	1	1	HI10007320	L.E.D. GL-9PR9, Signal 3
DY04	1	1	HI10006320	L.E.D. GL-9NG9, Tuned
DY05	1	1	HI10007320	L.E.D. GL-9PR9, Stereo
WY01	1	1	YZ05200260	Jumper Lead (5P)

REF. DESIG.	Q'TY N	Q'TY A	PART NO.	DESCRIPTION
				PZ00-DIAL POINTER CIRCUIT BOARD
PZ00	1	1	YK444H1550	P.W. Board, Dial Pointer
	1	1	ZZ444H8550	P.W. Board Assembly
DZ01	1	1	HI10032320	L.E.D. GL-9PR24

(W01-99)	Assembly and Wiring
(T01-99)	Adjustment
(X01-00)	Correction

NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

9. TECHNICAL SPECIFICATIONS

FM TUNER SECTION

Frequency Range ..... 88 ~ 108 MHz
Usable Sensitivity 40 kHz Deviation, 98 MHz
  Mono S/N 26 dB, 75 ohms ..... 0.8 μV
  Stereo S/N 46 dB, 75 ohms ..... 25 μV
Signal-to-Noise Ratio at 98 MHz
  Un-weighted Mono ..... 70 dB
  Stereo ..... 63 dB
  Weighted Mono ..... 76 dB
  Stereo ..... 68 dB

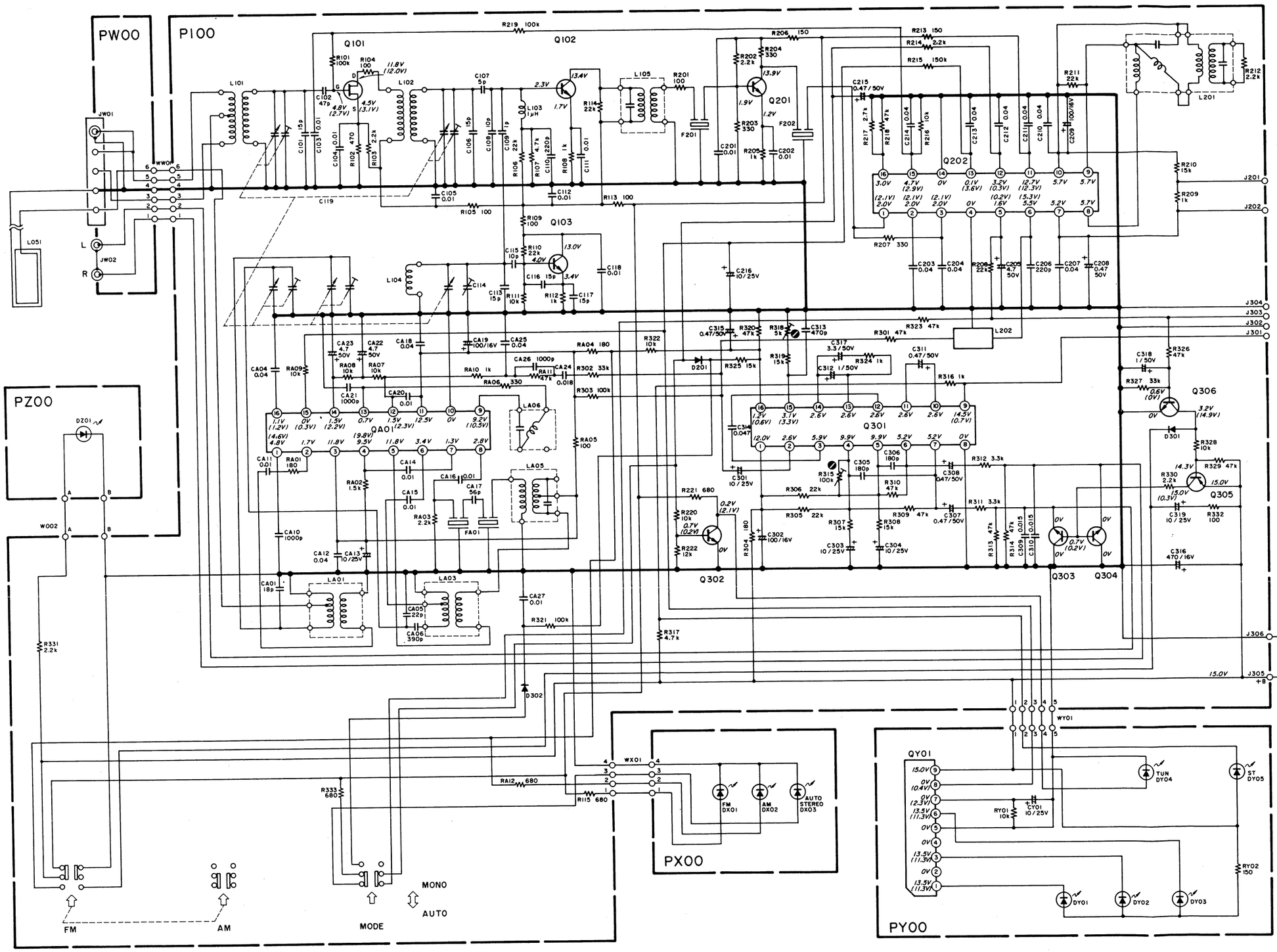
MW TUNER SECTION

Frequency Range ..... 531 ~ 1602 kHz
Usable Sensitivity (20 dB S/N 30% Mod., 1 MHz) ..... 700 μV/m
Selectivity 1 MHz ..... 30 dB

LW TUNER SECTION

Frequency Range ..... 153 ~ 281 kHz
Usable Sensitivity (20 dB S/N, 30% Mod, 220 kHz) ..... 1200 μV/m
Dimensions (W x H x D) ..... 416 x 60 x 200 mm
Weight ..... 1.6 kg

10. SCHEMATIC DIAGRAM



Components and wiring are subject to change for modification without notice.

Model ST140

Q101
HF20055ID0
2SK55D

Q102,Q103
HT30829IC0
2SC829C

Q201,Q302
Q303,Q304,Q306
HT327852D0
2SC2785(E or F)

Q202
HCI0033010
HA11225

Q301
HCI0046020
AN7470

Q305
HTIII752D0
2SA1175(E or F)

QA01
HCI0041030
LA1240

QY01
HCI0146030
LB1423

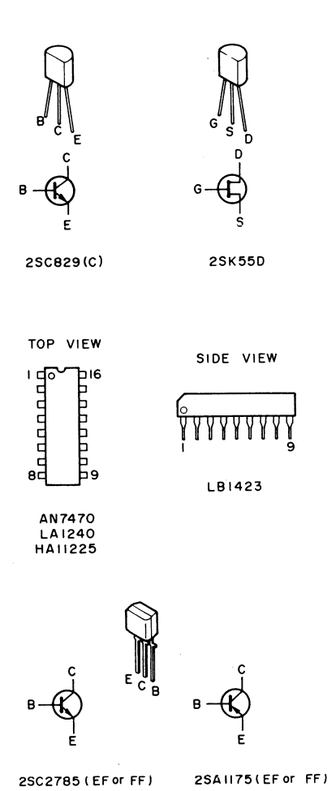
D201,D301,D302
HD20001000
IS1555, IS2473, ETC

DX01 ~ DX03
Hil0044020
LN310GP(GREEN)

DY01 ~ DY03, DY05
Hil0007320
GL-9PR9(RED)

DY04
Hil0006320
GL-9NG9(GREEN)

DZ01
Hil0032320
GL-9PR24(RED)



Model ST140L

Q101
HF200551D0
2SK55D

Q102, Q103
HT308291C0
2SC829C

Q201, Q302
Q303, Q304, Q306
HT327852D0
2SC2785 (E or F)

Q202
HC10033010
HA11225

Q301
HC10046020
AN7470

Q305
HT111752D0
2SA1175 (E or F)

QA01
HC10041030
LA1240

QY01
HC10146030
LB1423

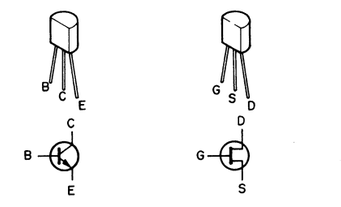
D201, D301, D302
HD20001000
1S1555, 1S2473, ETC

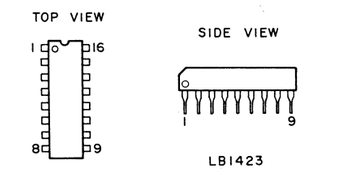
DX01 ~ DX03
Hi10044020
LN310GP (GREEN)

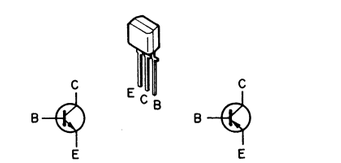
DY01 ~ DY03, DY05
Hi10007320
GL-9PR9 (RED)

DY04
Hi10006320
GL-9NG9 (GREEN)

DZ01
Hi10032320
GL-9PR24 (RED)







NOTE ON SAFETY:
Symbol ⚠ Fire or electrical shock hazard. Only orignal parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Components and wiring are subject to change for modification without notice.